

RESILIENCE
TO NATURE'S
CHALLENGES

Kia manawaroa –
Ngā Ākina o
Te Ao Tūroa

TE TAI WHANAKE

Growing a stronger, more resilient Aotearoa.

📍 Te Papa, Wellington 13 & 14 May 2024

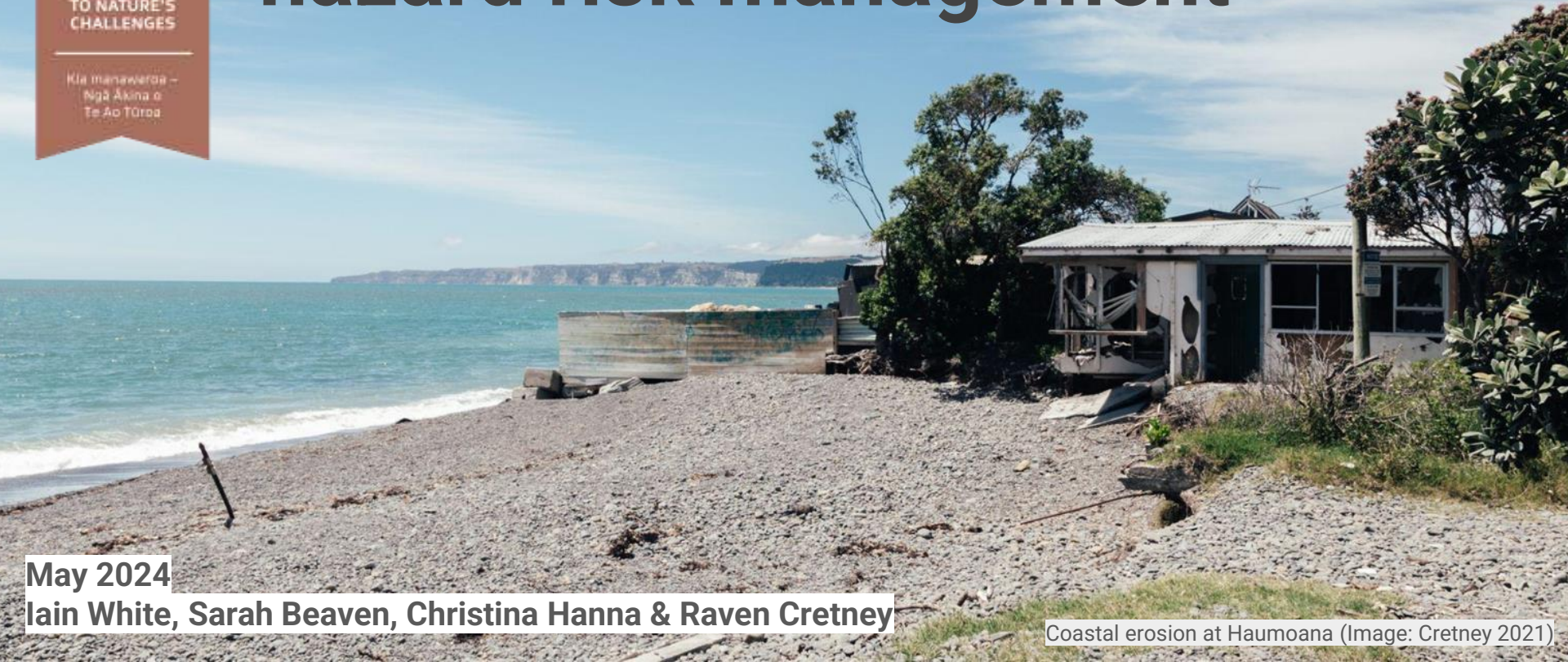
Decision-making for integrated hazard risk management

Currently, decision-makers have to mediate considerable institutional, professional, and political risks that arise from mitigating natural hazards, such as how sure are we? How much will it cost? Who pays? What should we prioritise? What arrangements or capability would improve a whole of nation approach to assessing and managing our significant natural hazard risks (and other threats)?

Speakers:

- Jo Horrocks, EQC Toka Tū Ake (*Chair*)
- Iain White, University of Waikato
- Sarah Beaven, University of Canterbury
- Nicky Eaton, DPMC
- Sarah-Jayne McCurrach, EQC Toka Tū Ake
- Holly Faulkner, University of Canterbury
- Garry McDonald, Market Economics

Decision making for integrated hazard risk management



May 2024

Iain White, Sarah Beaven, Christina Hanna & Raven Cretney

Coastal erosion at Haumoana (Image: Cretney 2021)

De-risking Resilience

The aim of this research programme was to acknowledge the real-world decision-making difficulties and scope and test strategies that are able to 'de-risk' the translation of resilience science into practice and outcomes.

2 core themes:

- Policy making for systemic change and transformation
- Safe innovation spaces for resilience decision-making at the science policy interface

Policy Making for Systematic Change

Covid-19 Recovery and Crisis Policy-making

The Evolution of Managed Retreat and Post-Retreat Land Use

Politics and Policy for Adaptation with Impacted Communities

From hope to disappointment? Fol
'Organisation' of hope in 'Building
Iain White¹, Raven Cretney¹

Green or Grey Pandemic Recovery? Revealing the Blue-Green
Infrastructure Influences in Aotearoa-New Zealand's "Shovel
Ready" Covid-19 Response
Christina Hanna¹, Iain White¹, Xinyu Fu, Kiri Crossland and Silvia Serrao-Neumann

Infrastructure in times of exception: Unraveling the
discourses, governance reforms and politics in 'Building Back
Better' from COVID-19
Iain White¹, Crystal Legacy^{1,2}, and Graham Haughton³

Abstract
In seeking to counter adverse economic impacts resulting from the COVID-19 pandemic, many governments quickly announced major infrastructure stimulus packages alongside a series of governance reforms to speed delivery. Despite significant differences between political, institutional and policy contexts of countries, clear trends emerged, most notably discourses of promise promoting the possibilities of state-led infrastructure allied to reforms to expedite delivery. Using case studies of Australia, Aotearoa-New Zealand and the UK, we draw upon theories of geopolitics and states of exception to explain how these approaches comprise a form of infrastructuralism that both elevates the criticality of infrastructure at the same time as depoliticising infrastructure planning. We argue that the promises of Building Back Better did not constitute the radical rupture from earlier practices initially promised and that in future crises we need to resist the closure of political space that typically accompanies emergency measures and ask: 'what infrastructure, for whom and where?'

PLANNING THEORY & PRACTICE
2022, VOL. 23, NO. 5, 681-702
<https://doi.org/10.1080/14649357.2022.2141845>

RTPI
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Re-Imagining Relationships with Space, Place, and Property: The
Story of Mainstreaming Managed Retreats in
Aotearoa-New Zealand
Christina Hanna¹, Raven Cretney¹ and Iain White¹

Department of Environmental Planning, University of Waikato, Aotearoa, New Zealand

Abstract
As a nation rapidly progressing managed retreat legislation, we take a historical perspective to identify how the imaginary of retreat evolved in Aotearoa-New Zealand to become mainstream. Tracing the history along a layered reactive-passive-proactive timeline, we reveal how policy experiments and technical advocacy coalitions have advanced different imaginaries of retreat, creating new political spaces for change. We identify the importance of understanding retreat as less of a "policy" and more an attempt to unmake and remake space that has implications for justice and the permanence of land-use and property in an era of dynamic risks.

KOTUTUI: NEW ZEALAND JOURNAL OF SOCIAL SCIENCES ONLINE
<https://doi.org/10.1080/1177083X.2024.2344497>

Routledge
Taylor & Francis Group

RESEARCH ARTICLE

OPEN ACCESS

Check for updates

Navigating adaptive futures: analysing the scope of political possibilities for climate adaptation
Raven Cretney^{1,2}, Iain White¹ and Christina Hanna¹

¹Department of Environmental Planning, University of Waikato, Hamilton, New Zealand; ²Department of Environmental Management, Lincoln University, Lincoln, New Zealand

Abstract
The growing scale and intensity of climate change poses a substantial challenge to the status quo of society and politics. Adapting to the risks associated with extreme weather events and changing climatic conditions will require the re-imagining of many aspects of politics and society. Therefore, climate change can be framed as a problem of imagination; one in which our relationship to the future is central to understanding how possibilities in the present are perceived. This research analyses public submissions made on New Zealand's first draft National Adaptation Plan to understand how future climate adaptation is framed and imagined by different groups. In analysing submissions we identify and describe four thematic 'adaptive futures' that each argue for varied amounts of socio-political change from the status quo: data driven resilience; growth and opportunity; nature-society change; and flaxroots transformation. Underpinning these adaptive futures are emerging advocacy coalitions that seek to shape what is seen as possible, imaginatively, politically and materially. Our analysis also highlights how risks and opportunities are perceived by whom, and insights into attempts to delineate the boundaries of adaptive imagination and political possibility.

Article History
Received 13 December 2023
Accepted 10 April 2024

Keywords
Futures; imaginaries; climate politics; adaptation; climate change; transformation



Hope & transformation in the shovel-ready programme

- The fund was seen as a way to transform society as well as provide stimulus and generated a lot of hope.
- Drawing upon press releases, media, Official Information requests, and Cabinet docs, we pieced together who hoped for what, including government ministers, and then followed the process to see how it constrained some hopes and privileged others.
- Technical process saw 1924 initial projects reduced to 177 presented to cabinet. Of these 150 were funded. Overall, we found that even if the Government wanted transformation and 'retained power' this was stunted by the processes they themselves set up, which privileged BAU.
- We need a long-term vision that engages with diverse communities to drive transformative change rather than rely on expert crisis response.

Geoforum 134 (2022) 154–164

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From hope to disappointment? Following the 'Taking Place' and 'Organisation' of hope in 'Building Back Better' from COVID-19*

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Keywords:
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Infrastructure
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Crisis
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ABSTRACT

Rapid economic stimulus in response to COVID-19, typically based on 'shovel-ready' infrastructure, has opened up new political spaces of hope to 'Build Back Better' and transform economies. This research seeks to link the public 'taking place' of hope, representing the aspirations of various groups for investment or change stimulated by this fund, with the less visible ways governments 'organise' hope, the expert, technical processes and rationalities that help determine which hopes become realised and why. Using the Aotearoa New Zealand 'shovel-ready' fund as a case study, and drawing upon press releases, media, Official Information requests, and Cabinet documents, we first provide a discourse analysis of the various government and non-government hopes that became attached to this stimulus. We then trace how these became translated into project proposals, before unpacking and analysing the urgent processes developed to assist political decision makers. While crises and hope can be positioned as having significant disruptive potential, we reveal how this was stifled by the technical processes and practices of the processual world enacted at the national scale, which was given significant power. Further, although public discourses reflected a plurality of multi-scalar and temporal hopes for investment, in practice the less visible organisation privileged a much more business-as-usual approach. Consequently, any government aspirations for transformation were rendered less likely due to the processes they themselves established. Overall, we emphasise the need for those committed to reform to bring technical processes and rational practices to greater prominence in order to reveal and challenge their power.

Key message: don't rely on crises to transform...

- The pandemic was a missed opportunity for transformation. Crisis response is more suited to recovery and restoration of normality than transformation.
- It's a mistake to rely on future crises to help us. If we want to transform we need to do it in our everyday politics, spatial plans, and investment strategies, and we need to take the communities with us.



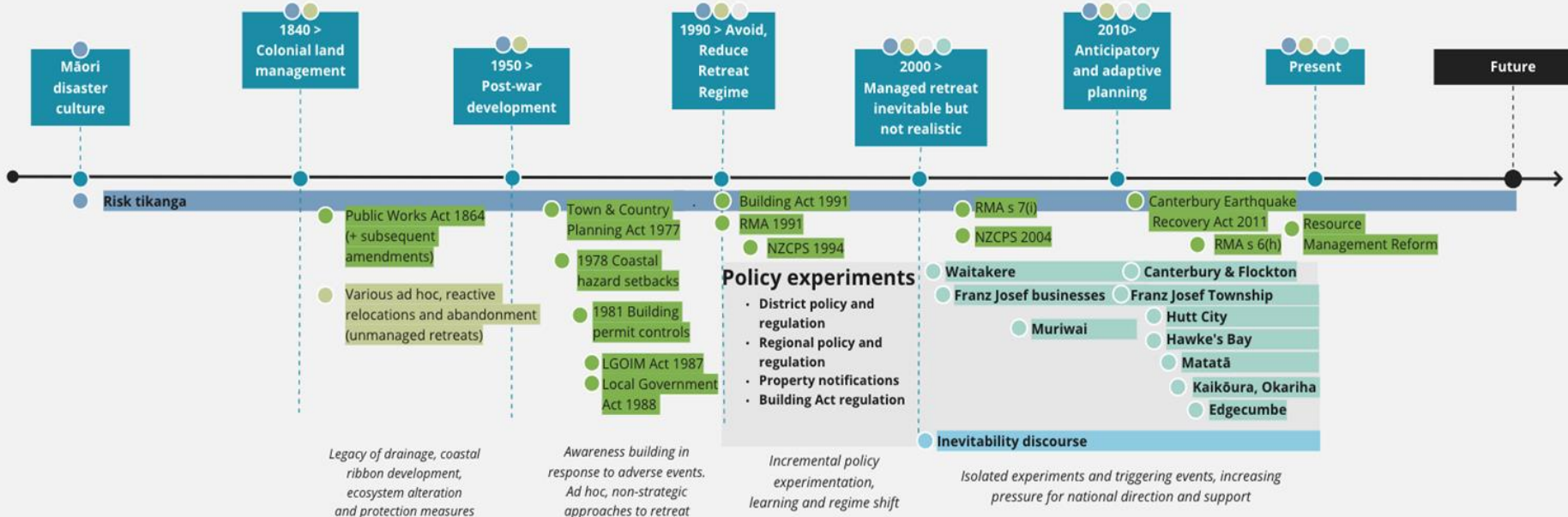
KEYWORDS
Spatial planning; climate change; cities; resilience; adaptation; water; greenspaces

Managed retreat policy and post-retreat land use

The evolution of managed retreats in Aotearoa

Key:

- Incremental policy experiments
- Isolated policy experiments
- Key enabling legislation



Further References

- White, I. and Cretney, C. (2022) From hope to disappointment? Following the ‘Taking Place’ and ‘Organisation’ of hope in ‘Building Back Better’ from COVID-19, *Geoforum*, 134: 154-164.
- White, I., Legacy, C. and Haughton, G. (2022) Infrastructure in times of exception: Unravelling the discourses, governance reforms and politics in ‘Building Back Better’ from COVID-19, *Environment and Planning C*, 40 (7): 1570-1588.
- Hanna, C., Cretney, R. and White, I. (2022) Re-Imagining Relationships with Space, Place, and Property: The Story of Mainstreaming Managed Retreats in Aotearoa-New Zealand, *Planning Theory and Practice*, 23 (5): 681-702.
- Hanna, C., White, Fu, X., Crossland, K. And Serrao-Neumann, S. (2023) Green or Grey Pandemic Recovery? Revealing the Blue–Green Infrastructure Influences in Aotearoa-New Zealand’s “ShovelReady” Covid-19 Response, *Urban Policy and Research*, 41 (1): 38-54.
- Cretney, R., White, I. And Hanna, C. (2024) Navigating Adaptive Futures: Analysing the scope of political possibilities for climate action, *NZ Journal of Social Sciences*, online first.

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DEPARTMENT OF THE
PRIME MINISTER AND CABINET
TE TARI O TE PIRIMIA ME TE KOMITI MATUA

Building resilience through New Zealand's National Risk Framework

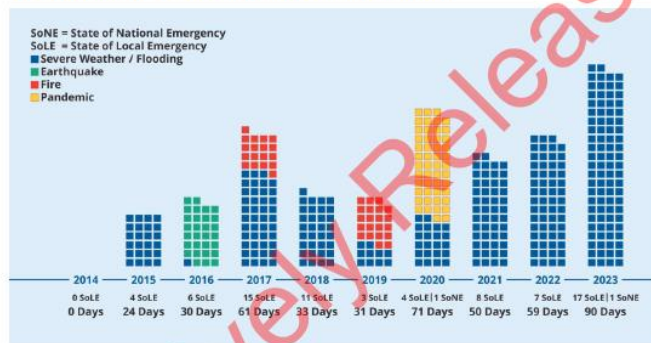
Nicky Eaton, Director, National Risk



National Risk Framework

The National Risk Framework exists to **drive action and investment that strengthens New Zealand's resilience** to the most significant hazards and threats we face.

Figure 1: Declared states of emergency and days declared



National Risk Framework: delivering action



National Risk Register
Strategic foresight*

Credible
evidence-base

Boards & Ministers

Strengthening National Resilience



Bouncing forward...



What we need to do

- Clarify and improve **system architecture**
- Connect to **decision-making**
- Strengthen **political oversight**
- Use **strategic foresight and expert challenge**

Thank you





TRANSLATING, SHARING & USING
DATA & MODELS ARE CRITICAL FOR REDUCING RISK



Known, modelled **SLR & coastal erosion** zones
Repeated **previous events**



Known, modelled **flood zone**
Repeated **previous events**
Historical information



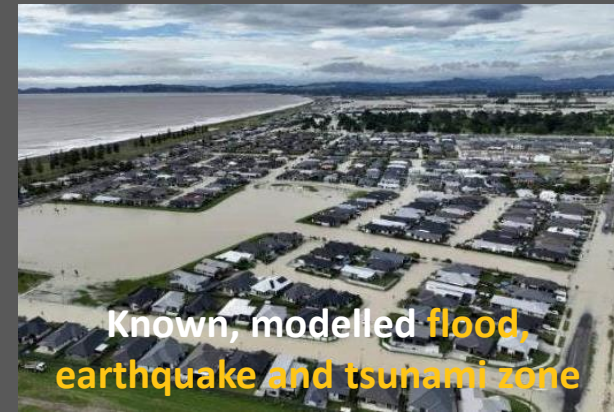
Known, modelled **landslip one**
Developed on a relic slip
Repeated **previous events**



Known, modelled **flood zone**



Known, modelled **flood zone**



Known, modelled **flood, earthquake and tsunami zone**



Known **wetland/inadequate land**



Known **liquefaction zones and earthquake risk**



Known **tsunami zone**

An aerial photograph showing a residential property built on a steep, eroded cliffside. The property includes a large house with a grey roof, a swimming pool, and a deck. A significant portion of the cliff face is exposed, showing a large area of soil erosion and a landslide. The surrounding area is lush with green vegetation, including ferns and trees. In the background, there are other houses and a road with parked cars.

THE PROBLEM



**We could have the best hazard risk
management governance in the world...**

BUT

(at the end of the day)...

**It means nothing, if we don't actually
reduce the risk**

By translating, sharing and using our data/science/evidence etc



**WHAT NEEDS TO CHANGE?
HOW DO WE DO IT?**

National
Science
Challenges

RESILIENCE
TO NATURE'S
CHALLENGES

Kia manawaroa –
Ngā Ākina o
Te Ao Tūroa



ARE WE READY? LEGAL PREPAREDNESS FOR THE AUCKLAND VOLCANIC FIELD

Holly Faulkner:

Holly.faulkner@pg.canterbury.ac.nz

Supervised by: Professor W. John
Hopkins and Professor Thomas Wilson

(University of Canterbury, New Zealand)

Case study
example:

**Mass
displacement
of people**

- Evacuation itself is short-term
- Mass displacement could be very long-term.
- Therefore, it requires long-term pre-planning.

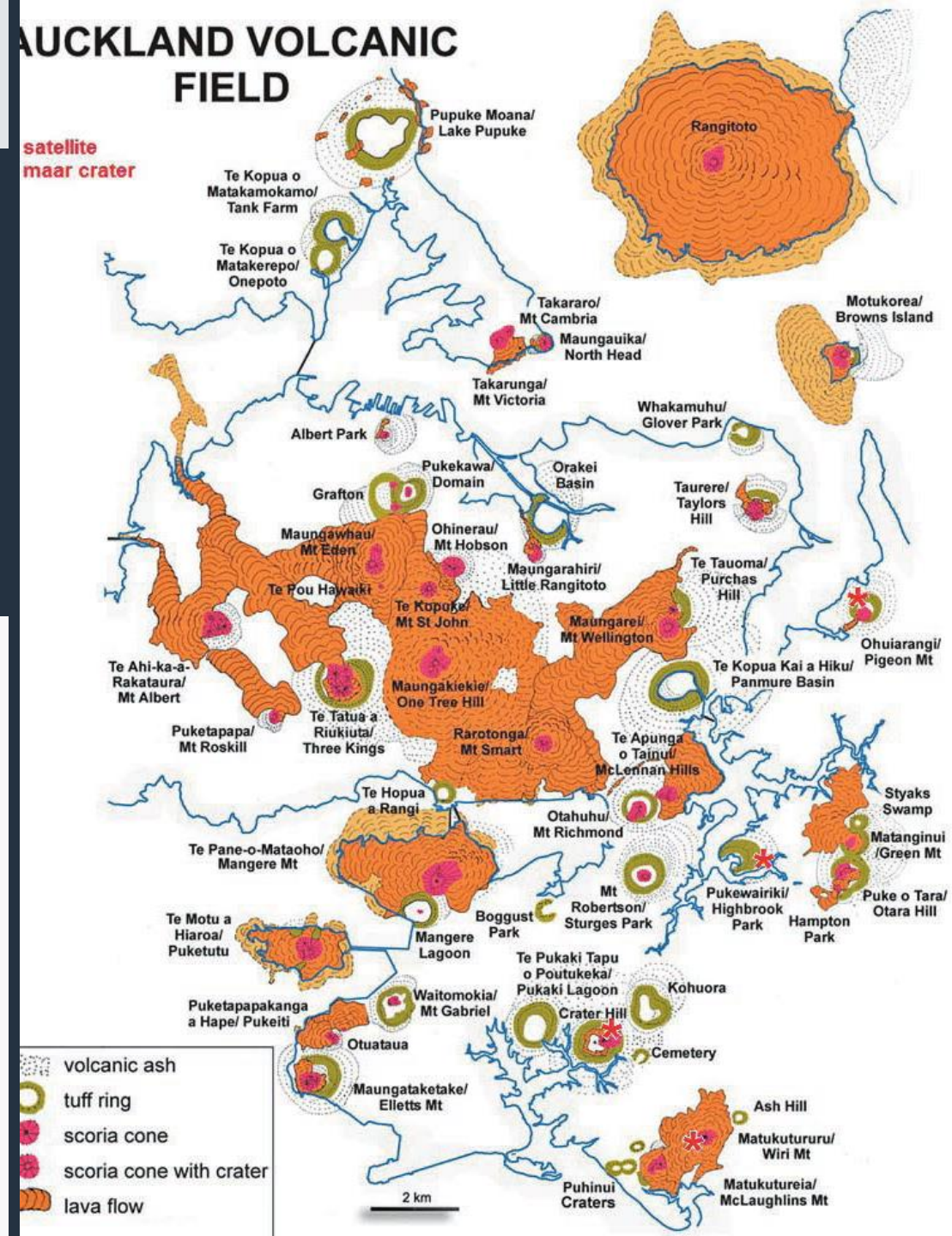
Evacuation of Auckland due to an AVF eruption

This evacuation will be tricky because we do not know where the evacuation will be.

Additional challenges are posed by Auckland's population density and geographic location.

AUCKLAND VOLCANIC FIELD

satellite
maar crater



Existing legal frameworks for large- scale evacuation of Auckland

National Level:

- CDEM Act 2002
- National Disaster Strategy
- National CDEM Plan
- Guide to the Plan

Regional Level:

- Auckland CDEM Group Plan
- Auckland Evacuation Plan
- Auckland Volcanic Field Contingency Plan
- Tāmaki Makaurau Operation Evacuation Plan dated October 2023

**QUESTION: WHAT DO
WE NEED TO MANAGE
PEOPLE FOR MASS
DISPLACEMENT IN
AUCKLAND?**



Evacuation

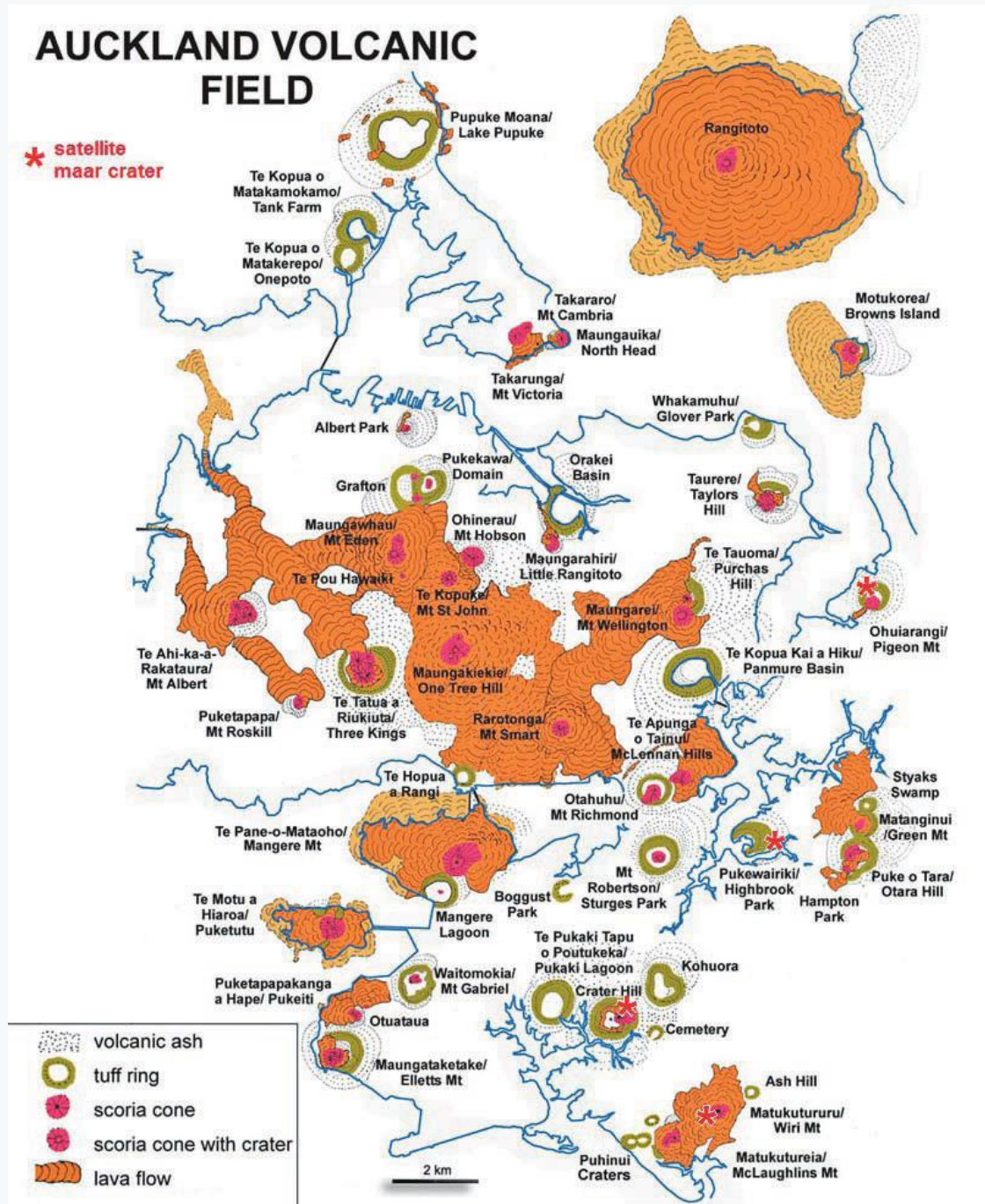
- Who will be evacuated and will undertake the evacuation?
- Where to evacuate?
- Where to put people?
- How will people be evacuated?
- Which evacuation routes will be taken?

How to evacuate people?

- Bus and/or rail?
- What about people who refuse to evacuate?
- What about places that are more challenging to evacuate – prisons, hospitals and retirement homes?
- How do you manage people who will attempt to go home or to another location before they evacuate?

Boundary

- Current AVF Contingency plan states that a 5km radius is expected as an evacuation zone around the eruptive vent.
- hard or soft?
- what about access to hospital?
- Key evacuation route?



What happens after evacuation?

- **Where do people go?**
- **How do you ensure that displaced persons have adequate provisions and services.**
- **When does temporary accommodation become resettlement?**



SILVER LINING



QUESTIONS?

Tranche 1 – Creating an economically resilient New Zealand

Enabling Pathways to Resilience

- Kaikoura Earthquake
- Wellington Resilience Programme Business Case
- SH1 Brynderwyn hills closure
- Canterbury CDEM and lifeline flooding business cases

Valuing Resilience Initiatives

- Wellington Resilience Programme Business Case
- Riskscape recovery CBA recovery tool guidance

Assess disruption impacts across space, through time, for multiple decision-makers

Expand Benefit-Cost Analysis to evaluate resilience building initiatives

Tranche 2 – Multi-hazard risk model

Distributional impacts

- Fuel security, Wiri pipeline outage
- COVID-19 network analysis
- Waikato River flooding
- Auckland climate change

Resilient value chains - PhD

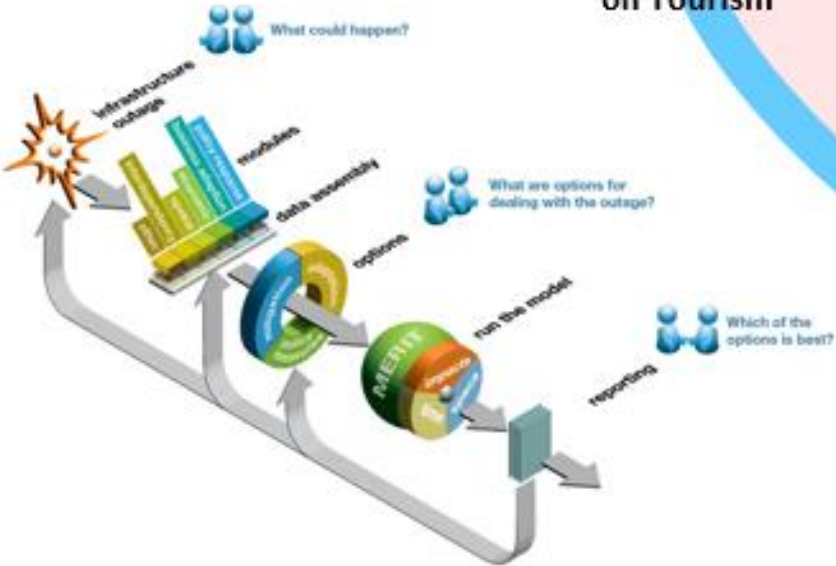
Uncertainty communication – PhD

End-to-end assessment of coincident and cascading hazards → risk assessment (people, assets, infrastructure) → dynamic socio-economic impacts

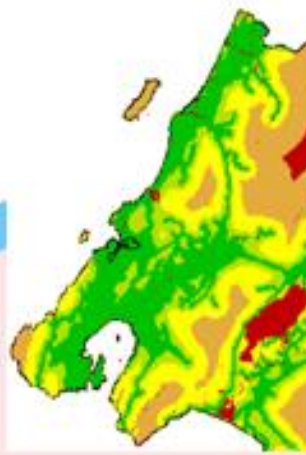
MERIT

Modelling the Economics of Resilient Infrastructure Tool

What's the MERIT modelling process?



Direct Impacts on Tourism



Direct Impacts on Transport – Fuel, Road, Rail, Water, Air, Ports



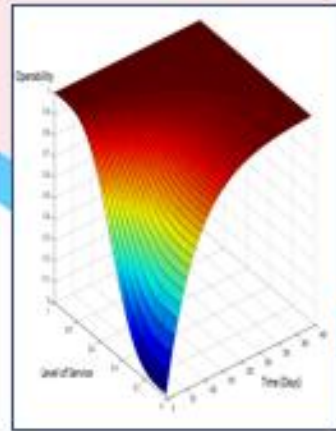
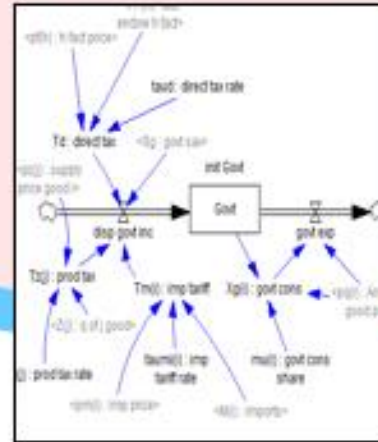
Direct Impacts of People & Business Relocation



Riskscape – Hazard, Building Damage, Infrastructure Outage Maps

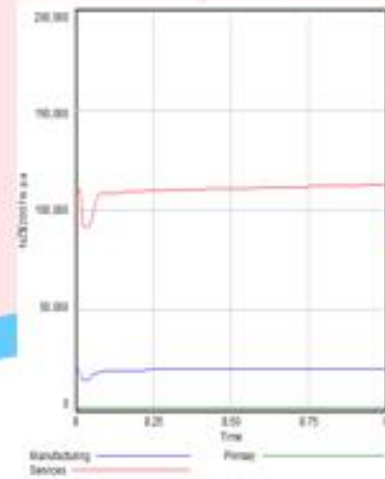
What's Included in MERIT?

Wider Economic Impacts using the Dynamic Economic Model



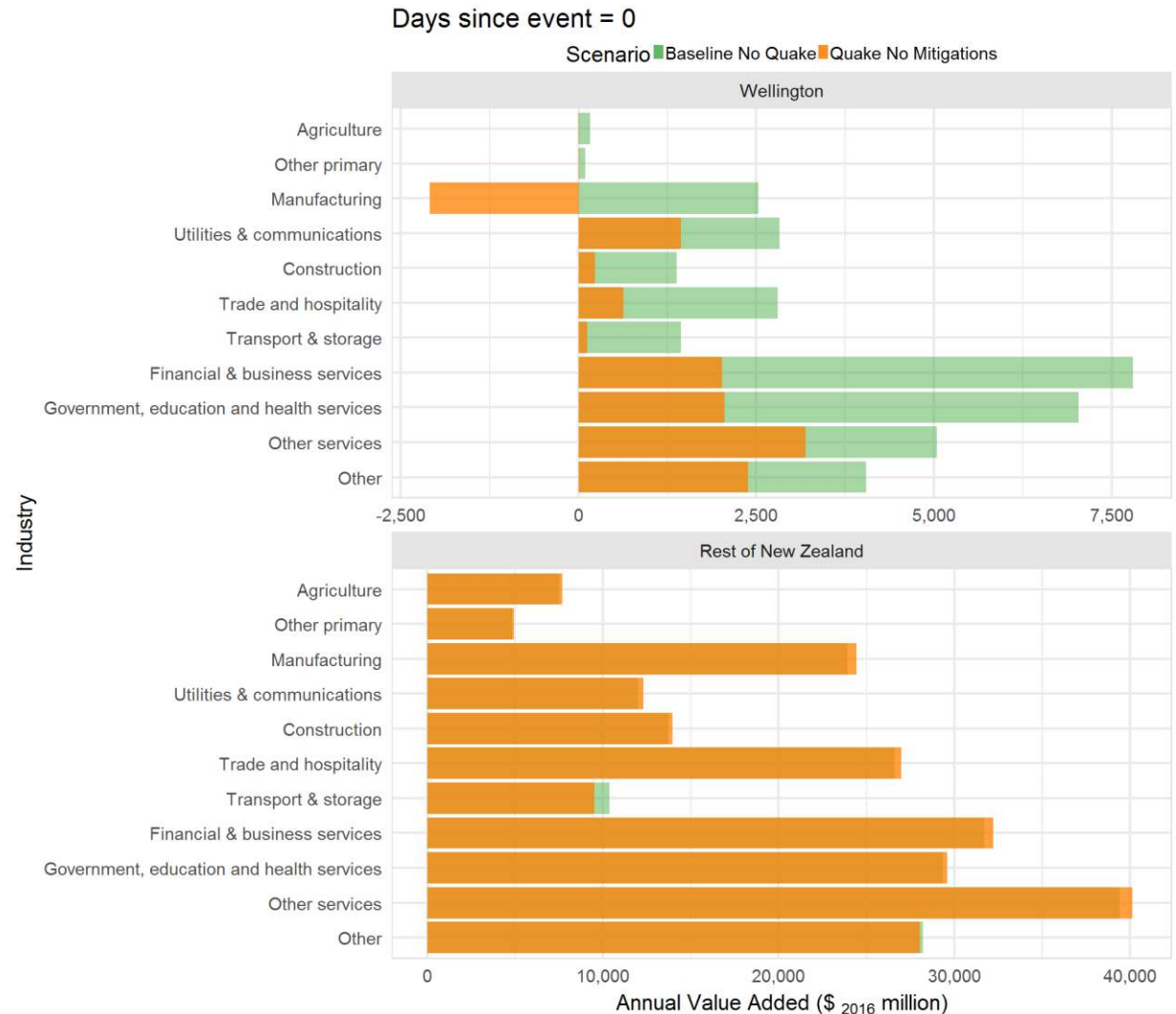
Direct Impacts on Business Operation

Results for Region, NZ – GRP, Income etc by industry



Wellington resilience project

- Assesses disruption impacts over 5 years by industry
- Measure ‘flow’ (incomes, employment, value added) and ‘stock’ (life/capital loss) impacts
- Compares *net* impact of event without and with bundled infrastructure mitigations
- Without investment \$16.6B, with resilience initiatives \$5.9B



Resilient value chains, distributional impacts and uncertainty communication

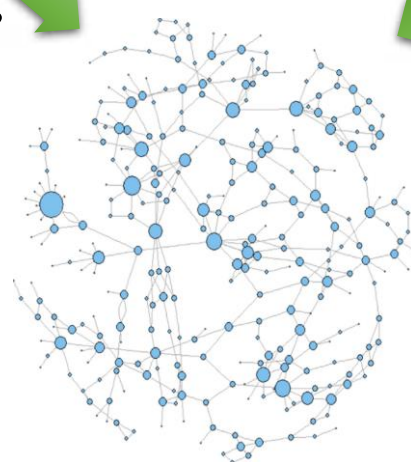
Multihazard Forecasting



Revenue changes

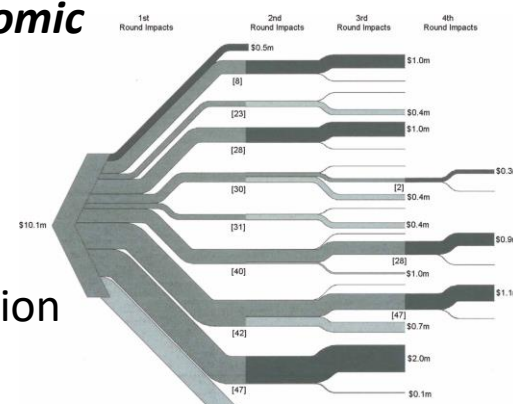
Expenditure changes

Resilience options/
investments, and who pays?



Moving beyond socio-economic impacts

- Dynamic value chains
- Household and business distributional impacts
- Uncertainty communication



Fit-for-purpose evaluation

- Move beyond hazards as single static events
- Coincident, cascading, with dynamic risks – impacts across space, through time, multiple decision-makers
- Recognise human systems are disrupted and changing rapidly
- Measure against a range of plausible futures, not just BAU
- Embrace uncertainty communication

- Programme rather than project business cases – infrastructures highly interconnected
- Risk bearing capacity